

substitute specification

**IMMUNOLOGICALLY ACTIVE POLYPEPTIDES WITH ALTERED TOXICITY  
USEFUL FOR THE PREPARATION OF AN ANTIPERTUSSIS VACCINE**

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- [01] This application is a continuation application of co-pending application serial number 08/261,668, filed June 17, 1994, which is a continuation application of application serial number 08/012,243, filed February 1, 1993, abandoned, which is a continuation application of application serial number 07/265,742, filed November 1, 1988, abandoned, which claims priority under 35 U.S.C. § 119 to Italian application serial number 22481 A/87 filed November 2, 1987.

**FIELD OF THE INVENTION**

- [02] The present invention relates to immunologically active polypeptides with no or reduced toxicity useful for the production of an antipertussis vaccine.
- [03] The invention also relates to a method for the preparation of said polypeptides and to an antipertussis vaccine comprising a therapeutically effective amount of at Least one of said polypeptides.

**BACKGROUND**

- [04] Pertussis is a respiratory system disease caused by *Bordetella pertussis* (*B. pertussis*), a bacillus the transmission of which occurs during the catarrhal and convulsive phase from a sick person to a healthy predisposed individual through the respiratory system.
- [05] A vaccine effective against said disease is particularly desirable since pertussis may cause convulsions, cerebral damages and, sometimes, death, principally in tender age children and in newborn Babies lacking maternal antipertussis antibodies obtained passively.
- [06] At present, it is employed an antipertussis vaccine comprising virulent bacteria killed with merthiolate and treated at 56°C that, even if it confers a permanent protection, it is